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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,993	03/31/2004	Edward Raymond Dowski JR.	420229	6078

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EXAMINER

CHAWAN, SHEELA C

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/813,993 ✓	Applicant(s) EDWARD RAYMOND DOWSKI JR.	
	Examiner Sheela C. Chawan	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18,20-25 and 31-41 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 26-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18,20-25 and 31-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2625

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on Nov 23, 2004 has been entered.

Response to Arguments

2. Applicant's arguments, see page 9, line 15, filed Nov 23, 2004, with respect to the rejection of claim(s) 1-18, 20-26, and 31-34, under 102(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Dowski, Jr. et al., (US. 6,525,302 B2).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claims 1- 18, 20-25, 31-41, are rejected under 35 U.S.C. 102(e) as being anticipated by Dowski, Jr. et al., (US. 6,525,302 B2).

As to claim 1, Dowski discloses an optical imaging system for reducing focus-related aberrations induced by an intervening medium (abstract, column 4, lines 40- 48), comprising.

Optics, including a wavefront coding mask (abstract, column 4, lines 49- 54; column 5, lines 9-26,39-48), for imaging a wavefront of the imaging system to an intermediate image (fig 1, element 418, detected image corresponds to an intermediate image, column 4, lines 49- 54) and for modifying phase (column 4, lines 52- 54) of the wavefront such that an optical transfer function of the optical imaging system (column 6, lines 21 – 34, column 10, lines 45-67) is substantially invariant to the focus-related aberrations induced, over time, by the intervening medium (column 9, lines 45- 60, column 10, lines 1-67).

a detector for detecting the intermediate image (fig 1, element 418); and

a decoder for processing data from the detector to process phase effects induced by the optics to form a final image that is substantially clear of the focus-

Art Unit: 2625

related aberrations (abstract, note, in fig 4, the coded image which is coming from the detected image then gets decoded in image processing fig 4, 424, the final image is decoded image which result in an in-focus image).

As to claim 2, Dowski discloses the system wherein the aberrations comprise one or more of misfocus, spherical aberration, astigmatism, field curvature, chromatic aberration, temperature induced misfocus aberration, pressure induced misfocus aberration, trefoil and Coma (column 12, lines 11-23).

As to claims 3 and 17, Dowski discloses the system of the wavefront coding mask being configured to account for focus-related aberrations defined by Zernike polynomials (column 3, lines 3-22).

As to claim 4, Dowski discloses the system of the optics comprising one or more optical elements (fig 4, element 404 and 410).

As to claim 5, Dowski discloses the system of the wavefront coding mask being integrated with the optical elements (column 6, lines 9-20).

As to claim 6, Dowski discloses the system of the wavefront coding mask being integrated with one or more surfaces of the optical elements (column 6, lines 9-20).

As to claim 7, Dowski discloses the system of the optical elements comprising adaptive optics (column 6, lines 35- 48).

As to claim 8, Dowski discloses the system of the adaptive optics comprising the wavefront coding mask (column 6, lines 35- 48).

As to claim 9, Dowski discloses the aberrations comprising one of piston error, quilting error and stuck actuator error (column 12, lines 1- 7).

As to claim 10, Dowski discloses the system wherein the wavefront coded structure is positioned at one or more of a principal plane of the imaging system, an image of a principal plane of the imaging system, an aperture stop of the imaging system, and an image of the aperture stop (fig 4, abstract, column 4, lines 49-54; column 5, lines 9-26,39-48).

As to claim 11, Dowski discloses the system wherein the intermediate image defines a modulation transfer function that has no zeros for detected spatial frequencies of the detector (column 7, lines 47- 61).

As to claims 12 and 32, Dowski discloses the system the decoder operable to restored each detected frequency of the wavefront in the final image (abstract, note, in fig 4, the coded image which is coming from the detected image then gets decoded in image processing fig 4, 424, the final image is decoded image which result in an in-focus image).

As to claim 13, Dowski discloses the system of the decoder being space variant to control aberrations comprising coma (abstract, column 12, lines 1-10).

As to claim 14, Dowski discloses the system of the decoder being dynamic to continually produce the final image while the aberrations vary, over time (column 11, lines 64-67, column 12, lines 1-10).

As to claim 15, see the rejection of claim 1.

As to claim 16, see the above rejection of claim 1.

As to claim 18, discloses the method of medium comprising air, the method being employed within lithography (column 2, lines 40- 67, column 5, lines 1- 26).

Art Unit: 2625

As to claims 20, 35 and 39 Dowski discloses an imaging system for reducing image distortion generated by reflections from a detector, comprising:

optics for imaging electromagnetic energy to the detector (column 5, lines 50-52); and

tilt (tilt corresponds to surface slope, column 3, lines 46-52) optics having a tilt surface that tilts away from a plane perpendicular to the imaged electromagnetic energy, for reflecting back-scattered radiation to an aperture stop of the imaging system (column 12, lines 36-55).

As to claims 21 and 36, Dowski discloses the system of claim 20, the tilt optics being positioned at the aperture stop (column 12, lines 36-55).

As to claims 22, 37 and 40, Dowski discloses the optics comprising a wavefront coded mask for modifying phase of a wavefront imaged to the detector, and further comprising a postprocessor (fig 4, 424, column 6, lines 21-34) for further reducing distortion effects introduced by the reflections (abstract, column 6, lines 21-34).

As to claims 23 and 41, Dowski discloses the imaging system wherein the optics are constructed and arranged for coding the wavefront such that an optical transfer function (column 10, lines 45-67) of the imaging system is modified to be substantially invariant to focus-related (column 10, lines 1-67, column 11, line 65 through column 12, line 10), aberrations, the postprocessor being configured to remove effects induced by the wavefront coded mask on the wavefront (abstract, fig 4, column 6, lines 21-34).

As to claim 24, Dowski discloses a method for reducing optical distortions within an optical system employing adaptive optics, comprising the steps of:

modifying phase of a wavefront of the optical system (abstract, column 4, lines 49-54; column 5, lines 9-26,39-48); and

post-processing image data of the optical system (fig 4, column 4, lines 40- 48, column 6, lines 21- 34) to remove phase effects induced by the wavefront coding mask, to control one or more of quilting, stuck actuator and piston error (column 4, lines 40-48, column 5, lines 9-26, 39- 48).

As to claim 25, Dowski discloses the method of the adaptive optics comprising a multi-segmented mirror (column 6, lines 35-48).

As to claim 31, Dowski discloses a biometric optical recognition system, comprising:

optics, including a wavefront coding mask (abstract, (abstract, column 4, lines 49-54; column 5, lines 9-26,39-48), for imaging a wavefront of object to be recognized to an intermediate image (fig 1, element 418); and

a detector for detecting the intermediate image, wherein a modulation transfer function (column 6, lines 9-21) detected by the detector contains no zeros (column 7, lines 47-60) such that subsequent task based image processing recognizes the object (column 12, lines 1-10).

As to claim 33, Dowski discloses the system of the decoder operable as an all-pass filter (column 11, lines 16-29) in the frequency domain (column 3, lines 23-65, column 10, lines 20-30, column 11, lines 1-15).

Art Unit: 2625

As to claim 34, Dowski discloses the system of the decoder operable as an attenuation filter (column 11, lines 16-29) in the frequency domain for magnifications of one or less (column 3, lines 23-65, column 10, lines 20-30, column 11, lines 1-15).

As to claim 38, see the rejection of claim 16.

Contact Information

Art Unit: 2625

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is. 571-272-7446. The examiner can normally be reached on Monday - Friday 7.30 - 4.00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sheela Chawan
Patent Examiner
Group Art Unit 2625
May 10, 2005